PubMed Office Hours

Automated Indexing for MEDLINE

September 21, 2022

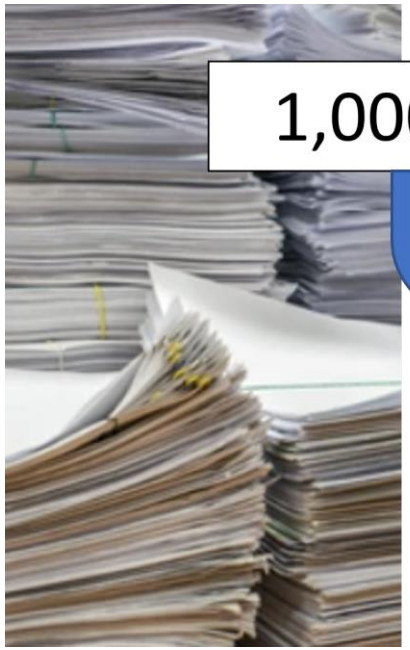
Susan Schmidt, Index Section

Who, what, when, where, and why?

- **Why the change to automated indexing?**
- **When was indexing automated?**
- **What algorithm is used for automated indexing?**
- **Who reviews automated indexing?**
- **Where is algorithm development going, and where can I find more information or report problems?**

Why the change to automated indexing? (problem)

Problem: human indexing did not scale



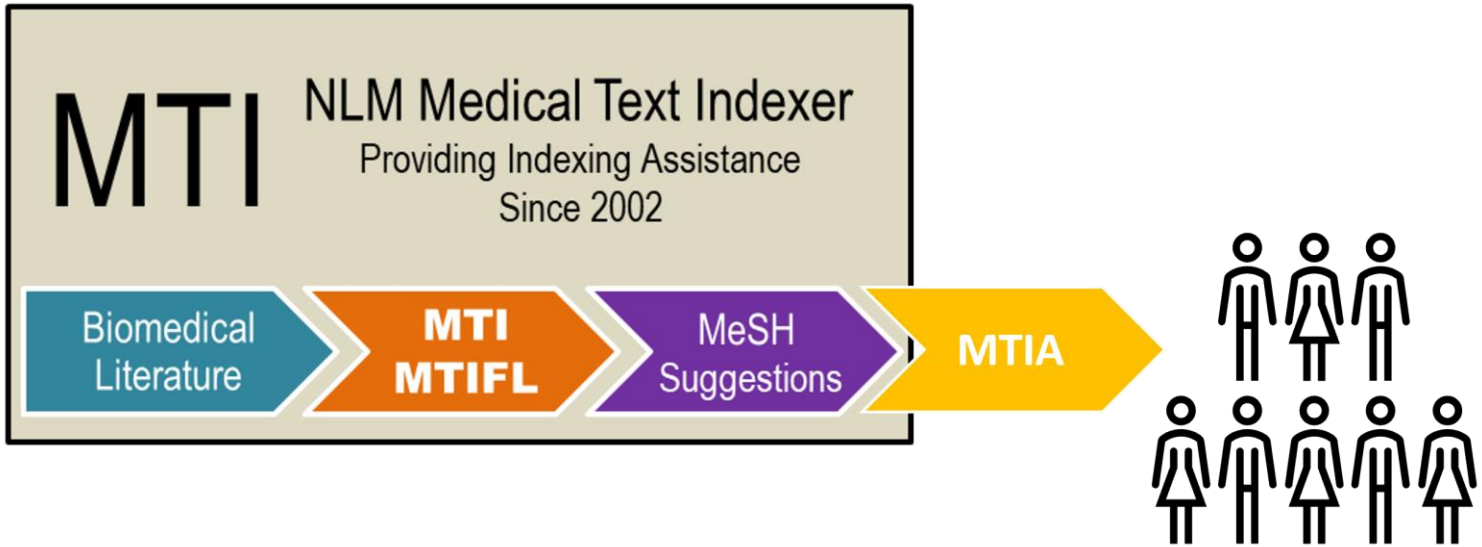
1,000,000+ articles published

600,000 article backlog

Many months to index

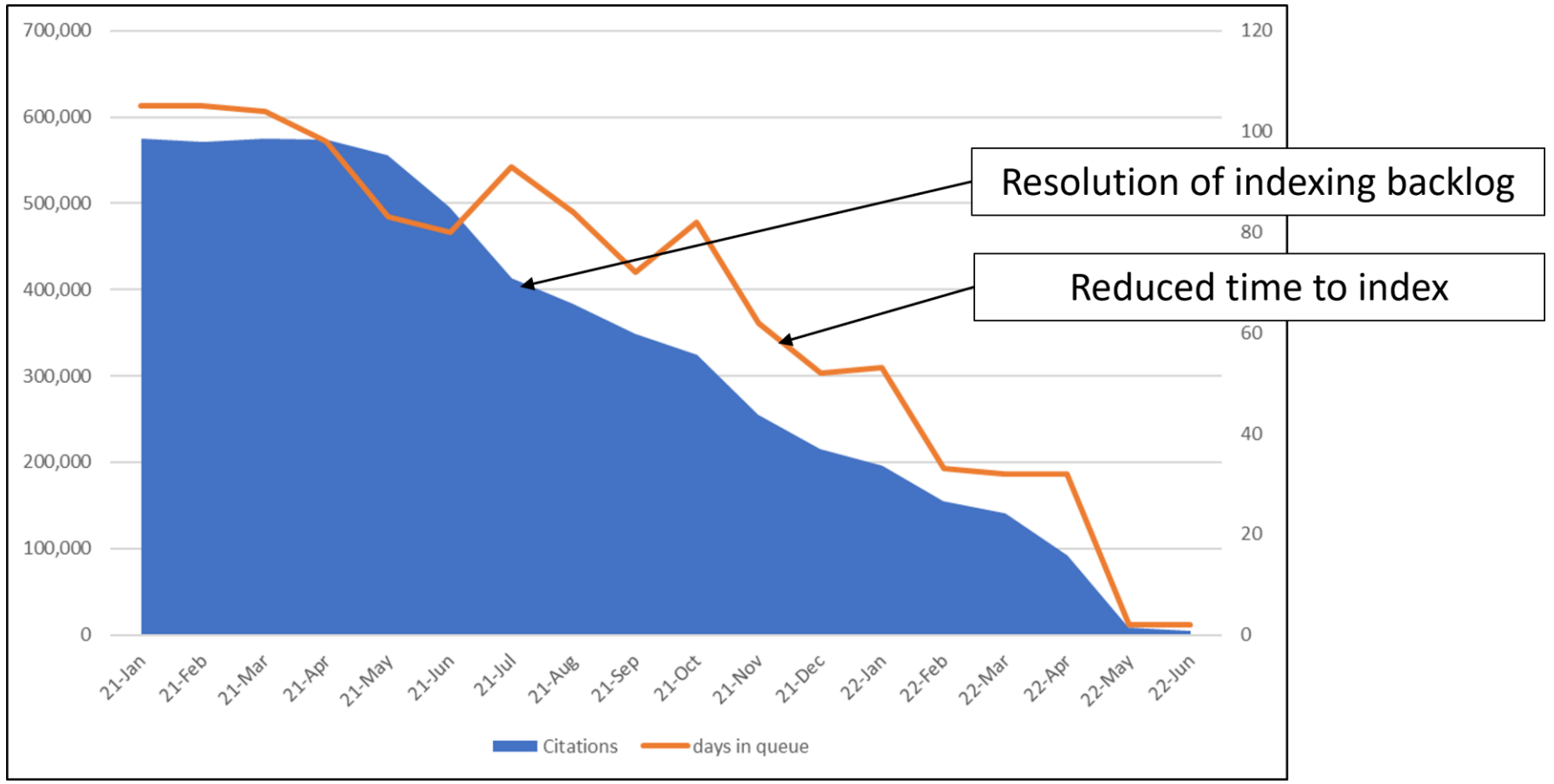
Solution: **MEDLINE 2022 Initiative**

Well-performing algorithm +



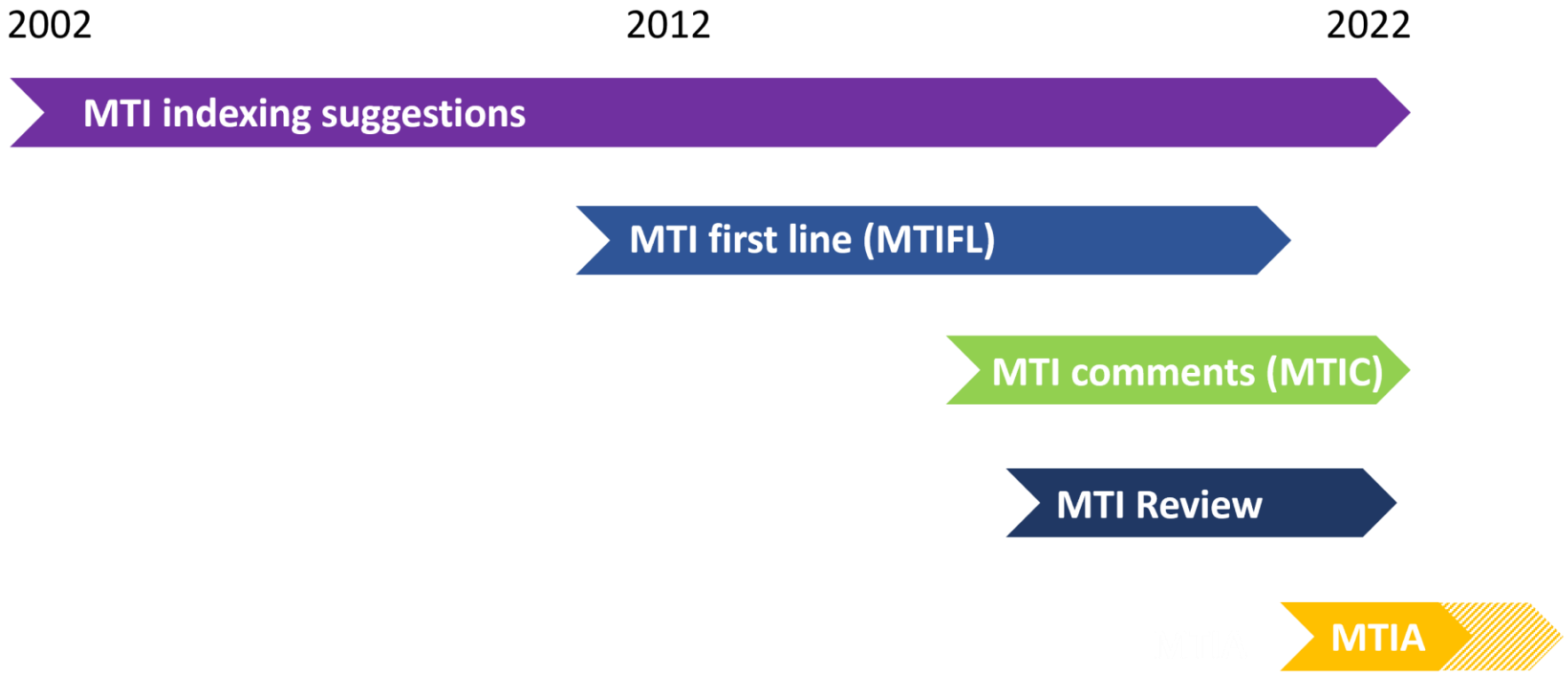
Human quality assurance

The impact of changing to automated indexing.



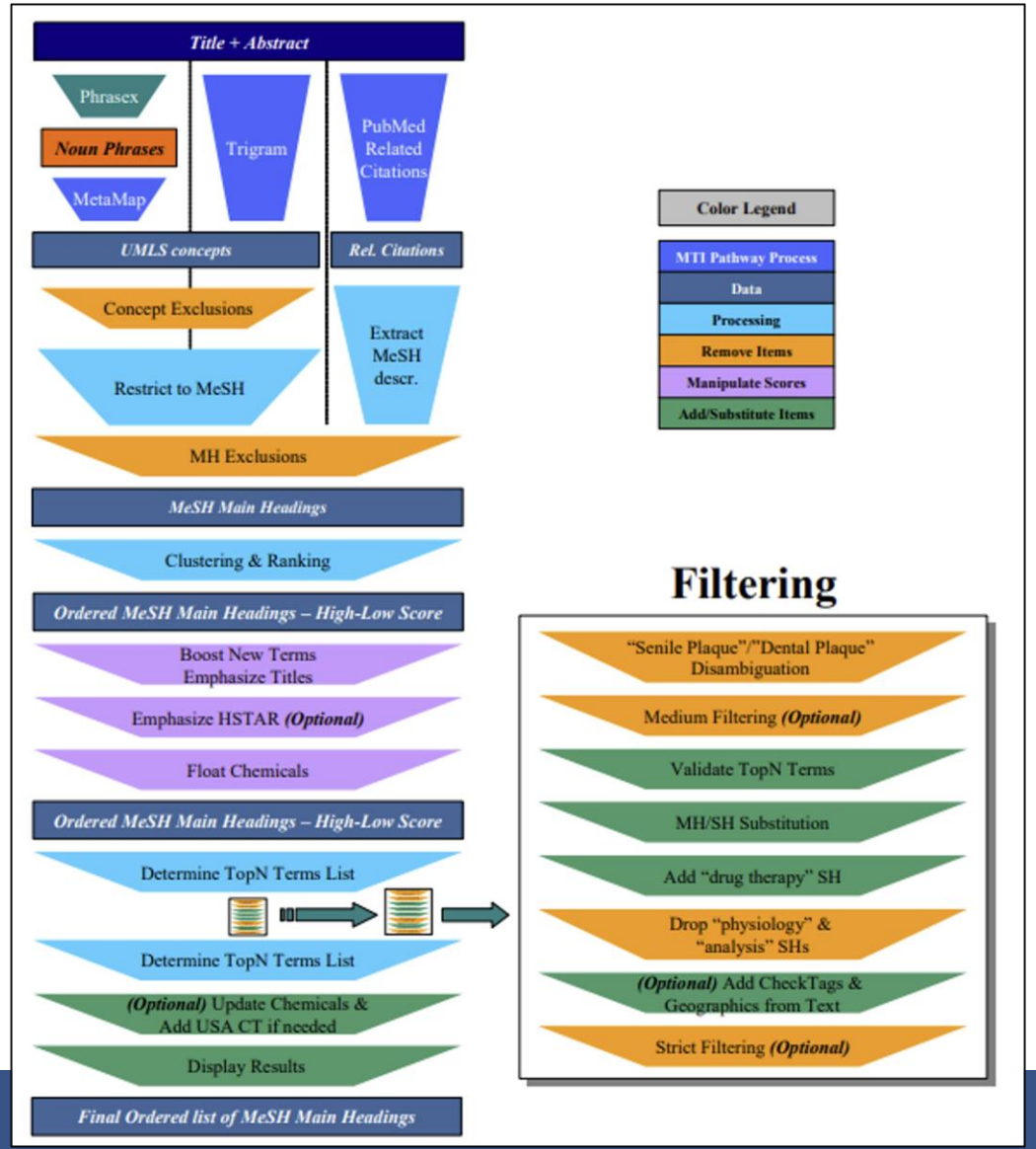
When was indexing automated?

April 2022!

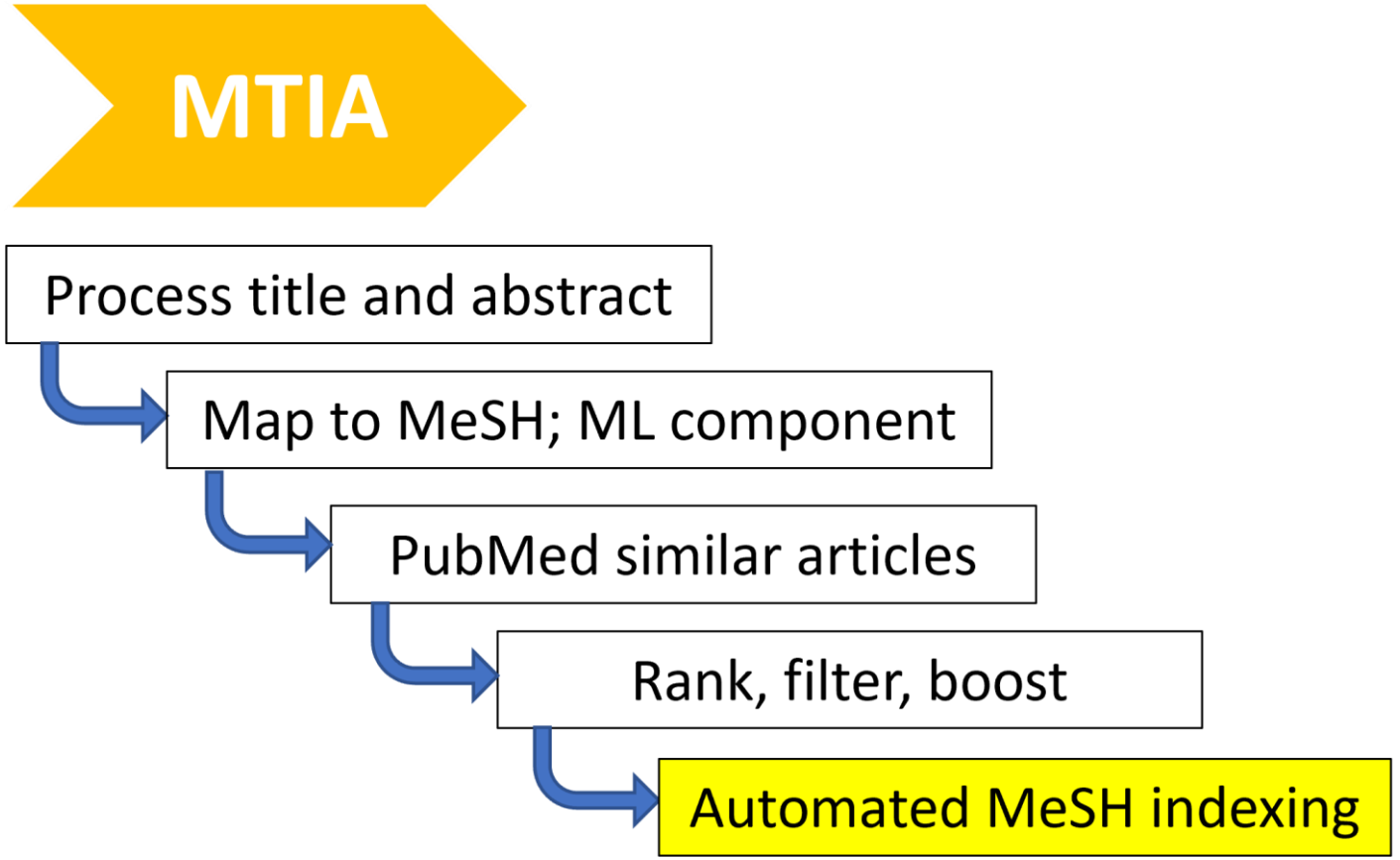


What algorithm is used for automated indexing?

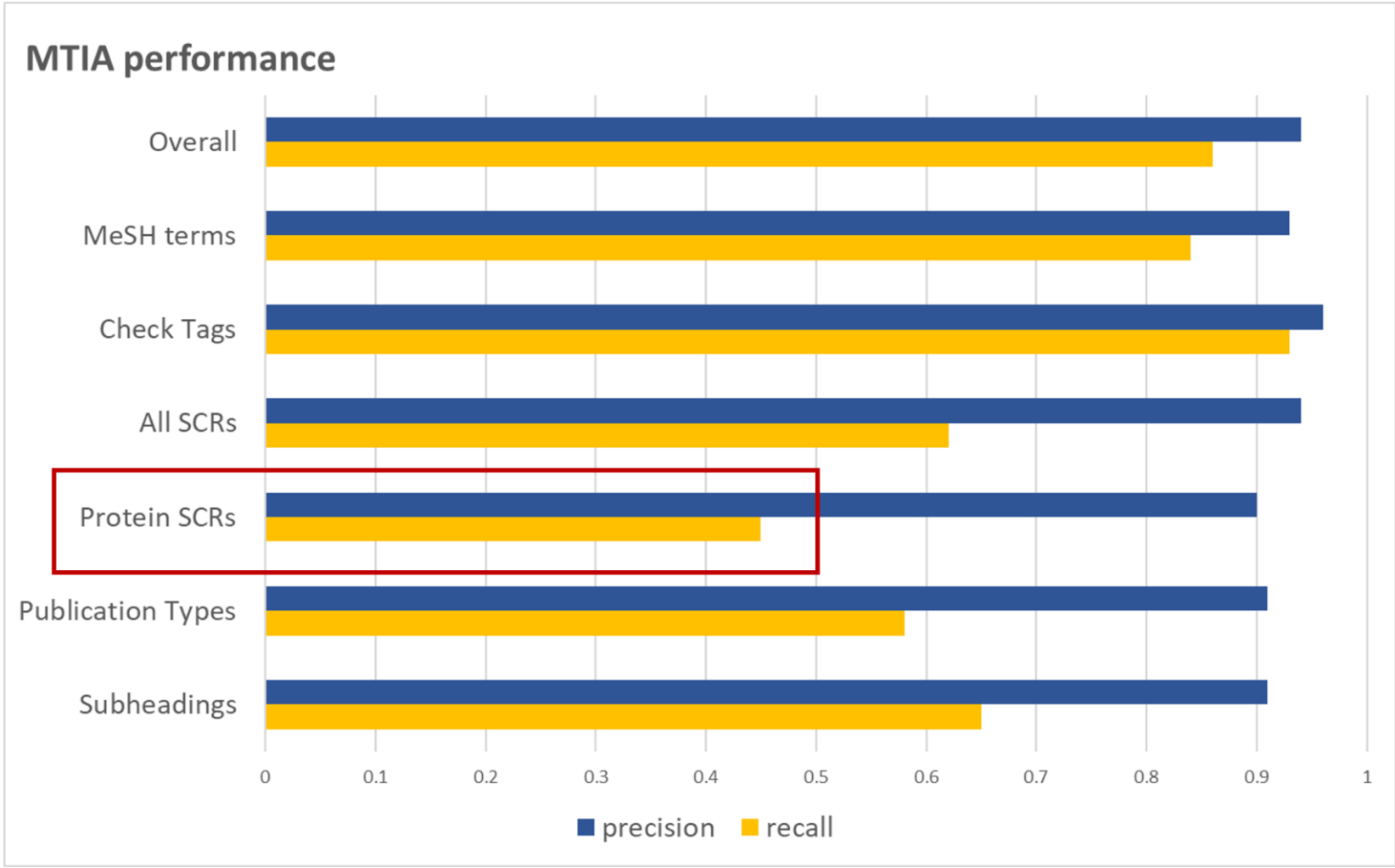
MTIA



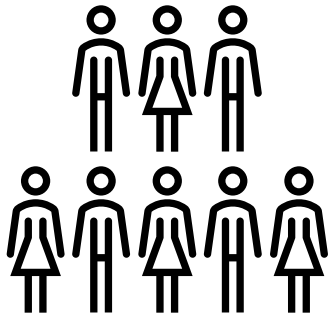
MTIA Workflow



MTIA Performance



Who reviews automated indexing?



Team of curators with domain expertise

Daily review of automation results

- Metaphor
- Genes/proteins
- Specific PTs

Random set of 10% of daily load

MTIA Indexing Citation Example

MTI-AUTO Indexing Citation

Provide Feedback

Contains Systematic Review

- Humans
- Male
- Retrospective Studies (PRC)
- *Alveolitis, Extrinsic Allergic
- Tomography, X-Ray Computed
- Risk Factors
- *Pneumonia
- Systematic Review (PT)
- Meta-Analysis (PT)

PMID 35819125 (Expert Rev Respir Med)

TI - Risk factors associated with mortality in hypersensitivity pneumonitis: a meta-analysis.

AB - BACKGROUND: Hypersensitivity pneumonitis (HP) related deaths have increased substantially in recent years. It is important to identify the risk factors of HP significantly associated with mortality to ensure close patient monitoring and assess disease progression. RESEARCH DESIGN AND METHODS: Extensive literature search was conducted in accordance with the PRISMA checklist. Literature search of PubMed, Embase, and Cochrane Library database between January 2009 and April 2021 using the terms 'hypersensitivity pneumonitis', 'hazard ratio', and 'mortality' identified 325 articles. A total of 22 independent original studies focusing on mortality of HP patients were assessed. RESULTS: This systematic review and meta-analysis suggests that increased age, male sex, honeycombing, and traction bronchiectasis patterns on high-resolution computed tomography (HRCT) images are the major mortality-related risk factors of patients with HP. In case of chronic HP, antigen exposure appeared to be an additional risk factor. CONCLUSIONS: The clinico-radiological risk factors of mortality identified for HP will enable effective and close monitoring of patients, prognostication, and guide toward appropriate management decisions. However, association between the type of antigen and mortality remains to be explored.

Where is algorithm development going?

Expanded machine learning

Continuing refinement

Retraining sets

Chemical algorithm development

Where can I find more information or report problems?

MEDLINE 2022: A Five-Year Development Plan

MEDLINE 2022: Transition to Automated Indexing

Incorporating Values for Indexing Method in MEDLINE/PubMed XML

Frequently Asked Questions about Indexing for MEDLINE

What are the main takeaways?

Indexing backlog eliminated

MEDLINE indexing within 1-2 days

Well-performing algorithm

Human quality assurance